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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,216	09/18/2003	Hideo Sano	Fukuda Case 42	8302
23474	7590	03/15/2006	EXAMINER	
FLYNN THIEL BOUTELL & TANIS, P.C. 2026 RAMBLING ROAD KALAMAZOO, MI 49008-1631			MORILLO, JANELLE COMBS	
			ART UNIT	PAPER NUMBER
			1742	
DATE MAILED: 03/15/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/666,216

Applicant(s)

SANO ET AL.

Examiner

Janelle Combs-Morillo

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 3 is objected to because of the following informalities: claim 3 (which is dependent on claim 1) mentions the extrusion of a hollow product, but claim 1 is drawn to a method of extruding a solid product. Therefore it is unclear how the limitations of claim 3 relate to said independent claim.
2. Claims 1-5 are objected to because of the following informalities: said claims should have actively recited method steps (i.e. extruding, cooling, homogenizing, etc.).
3. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 07-041897A (JP'897) or Wade (US 5,503,690).

JP'897 teaches a process of extruding an aluminum alloy, said alloy comprising (in weight%): 0.8-1.4% Mg, 0.9-1.8% Si, 0.7-1.2% Cu, 0.1-1.2% Mn+Cr+Zr (abstract, see also examples in Table 1), which substantially overlaps the alloy composition in instant claims 1 and 4 as well as equations 1-4 (see Table below). JP'897 obtains an extrusion fiber texture and prefers $\geq 50\%$ fiber texture [0011], which substantially overlaps the presently claimed $\geq 60\%$.

Art Unit: 1742

JP'897 further teaches homogenizing prior to extrusion at temperature of 530 °C [0014], and solution heat treating after extruding by heating to 540 °C, water quenching, and artificially aging at 175°C for 12 hr.

	Si		Mg		Cu		equation 1		equation 2		equation 3		equation 4	
	min	max	min	max	min	max	min	max	min	max	min	max	min	max
Wade	0.6	1.2	0.7	1.2	0.3	1.1	1.6	3.5	1.02	2.04	1.3	2.4	0.15	1.15
JP'897	0.9	1.8	0.8	1.4	0.7	1.2	2.4	4.4	1.53	3.06	1.7	3.2	0.35	1.2

Similarly, Wade teaches a process of extruding an aluminum alloy, said alloy comprising (in weight%): 0.7-1.2% Mg, 0.6-1.2% Si, 0.3-1.1% Cu, 0.1-0.8% Mn, 0.05-0.25 Zr (abstract, see also examples in Table 1), which substantially overlaps the alloy composition in instant claims 1 and 4 as well as equations 1-4 (see Table above). Wade obtains an extrusion fiber texture (column 5 lines 25-28) and prefers 5-100% fiber texture (column 7 lines 34-35), which overlaps the presently claimed $\geq 60\%$. Wade further teaches homogenizing prior to extrusion at temperature of 1000°F (column 5 lines 31-33), and solution heat treating after extruding, press quenching with water (column 6 lines 16-18), and artificially aging (such as 4 hrs at 375°F, see Table III). Wade teaches said alloy can be extruded into a variety of configurations including hollow and solid sections (column 5 lines 48-51).

Neither Wade nor JP'897 teach the apparatus limitations of said method claims 1-3. However, applicant has not shown that said apparatus limitations materially effect the presently claimed process steps. Because Wade or JP'897 teaches a process with substantially the same steps as presently claimed, complete with an overlapping alloy composition, it is held that Wade or JP'897 have created a prima facie case of obviousness of the presently claimed invention.

Art Unit: 1742

6. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 07-041897A (JP'897) or Wade (US 5,503,690) in view of JP2002-317255 (JP'255) or JP2001-205329A (JP'329).

JP'897 and Wade are discussed in paragraphs above. Neither Wade nor JP'897 teach the apparatus limitations of said method claims. However, the prior art of JP'255 (drawn extrusion of similar 6xxx alloys) teaches substantially similar extrusion apparatus parameters, including a thickness (T) of the product 50-100mm [0018-0019], and a bearing length of a solid die $L \approx T$ (see diagrams).

Alternatively, JP'329 (also drawn extrusion of similar 6xxx alloys) teaches substantially similar extrusion apparatus parameters, including a thickness (T) of the product 1.4-2.5mm (Table 2), and a bearing length of a solid die $L=H_b=1.5-4.0$ (see [0005], Table 1) (see diagrams).

It would have been obvious to one of ordinary skill in the art to use the apparatus taught by JP'225 or JP'329 when extruding the alloys taught by JP'897 or Wade because JP'255 teaches a product with no cracking and excellent strength can be obtained (abstract), or because JP'329 teaches a product without defects and complicated shape can be obtained (abstract).

7. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 07-041897A (JP'897) or Wade (US 5,503,690) in view of JP2002-317255 (JP'255) or JP2001-205329A (JP'329).

JP'897, Wade, JP'255, JP'329 are discussed in paragraphs above. Neither Wade nor JP'897 teach the apparatus limitations of said method claims. However, the prior art of JP'255 teaches a flow guide is used during said extrusion, and is placed at the front of the solid die (#23, see Fig. 2). JP'255 also teaches an inner circumferential surface is separated from an outer

Art Unit: 1742

circumferential surface with the bearing of the solid die at a distance of $A \geq 20$ mm (abstract, see also Figures), which meets the instant limitation of $A \geq 5$ mm. JP'225 teaches the thickness of the flow guide 23 is $B=5-25\%$ of the outer diameter of the flow guide (which is substantially equal to the thickness of the billet, see Fig. 2).

JP'329 teaches a flow guide is used during extrusion, and that the thickness of the billet $D=W_f=175$ mm (see [0022]), thickness of the extrusion $T=W_b=1.4-2.5$ mm (Table 2), and because $w_f-w_b=2A$, then $A=86.25-86.8$ mm, which meets the instant limitation of $A \geq 5$ mm. JP'329 teaches length B of flow guide (see Fig. 2) $B=H_f=10$ mm (which is a close approx. of 5% of the thickness of the billet), and bearing length $H_b=L=1.5-4.0$ mm (see Table 2), which meets the instant limitation of $L \leq 5T$.

It would have been obvious to one of ordinary skill in the art to use the apparatus taught by JP'225 or JP'329 when extruding the alloys taught by JP'897 or Wade because JP'225 teaches a product with no cracking and excellent strength can be obtained (abstract), or because JP'329 teaches a product without defects and complicated shape can be obtained (abstract).

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over (JP'897 or Wade) optionally combined with (JP'255 or JP'329) in view of Couper (US 6,364,969).

JP'897, Wade, JP'255, and JP'329 are discussed in paragraphs above. JP'897 and Wade teach heat treatments substantially similar to the presently claimed heat treatments, but do not mention the presently claimed cooling rate after homogenization. However, Couper (who is also drawn to similar 6xxx type alloys) teaches that cooling at controlled rate of ≥ 400 °C/hr after homogenizing is necessary to prevent MgSi precipitates from growing too large (column 8 lines 32-42). It would have been obvious to one of ordinary skill in the art to cool after homogenizing

Art Unit: 1742


at a fast rate of ≥ 400 °C/hr, because Couper teaches said fast cooling rate prevents MgSi precipitates from growing too large, thereby allowing for a final extruded product with superior strength (column 8 lines 32-42).


Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janelle Combs-Morillo whose telephone number is (571) 272-1240. The examiner can normally be reached on 8:30 am- 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JCM 
March 9, 2006


GEORGE WYSZOMIERSKI
PRIMARY EXAMINER
GROUP 1700